Elastomer Compatibility Testing

Elastomer performance in a downhole service environment can be affected by:

- Oil & water composition
- CO_2 & H_2S content of gas
- Stimulation & work over fluids
- Service temperature & pressure
- Seal design
- Operating procedures (decompression rate)

To provide suitable equipment performance, the elastomers must retain:

- Mechanical properties of elasticity and tensile strength (i.e. must not harden or soften
- Physical dimensions (i.e. must not shrink, swell or erode)

The performance of a particular elastomer in a specific service environment cannot be predicted reliably without testing.

TESTING OPTIONS

Immersion Test

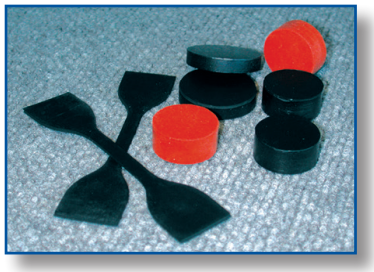
- Measures changes in mass, volume and hardness
- Semi–quantitative comparison of elastomer performance

Mechanical Properties Degradation Test

- Measures changes in mass, volume, hardness, elongation and tensile strength
- Semi–quantitative comparison of elastomer performance

Continuous Swell Monitoring Test

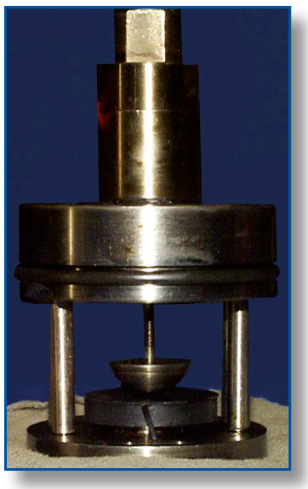
- Continuous measurement of changes in elastomer volume during: compression, heating, operating and decompression
- Quantitative estimation of long–term elastomer performance



APPLICATIONS

The results of the elastomer compatibility tests can be combined with finite element analyses and/or full–scale laboratory tests to evaluate the performance of the complete tool/equipment assembly for applications such as:

- Packers and bridge plugs
- Power sections for drilling
- Progressing cavity pumps
- Blow out preventers
- Subsea equipment
- Logging tools



Continuous swell monitoring device with disc specimen installed

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